ACCESSORY KIT INSTALLATION MANUAL

DUAL FUEL CONTROL KIT 3024-7481/F

FOR USE WITH MODELS: BRHS, BRHQ, DRHS, DRHQ, ERHS, ERHQ, THGD, GHGD, YHJD, CHJD, LHJD

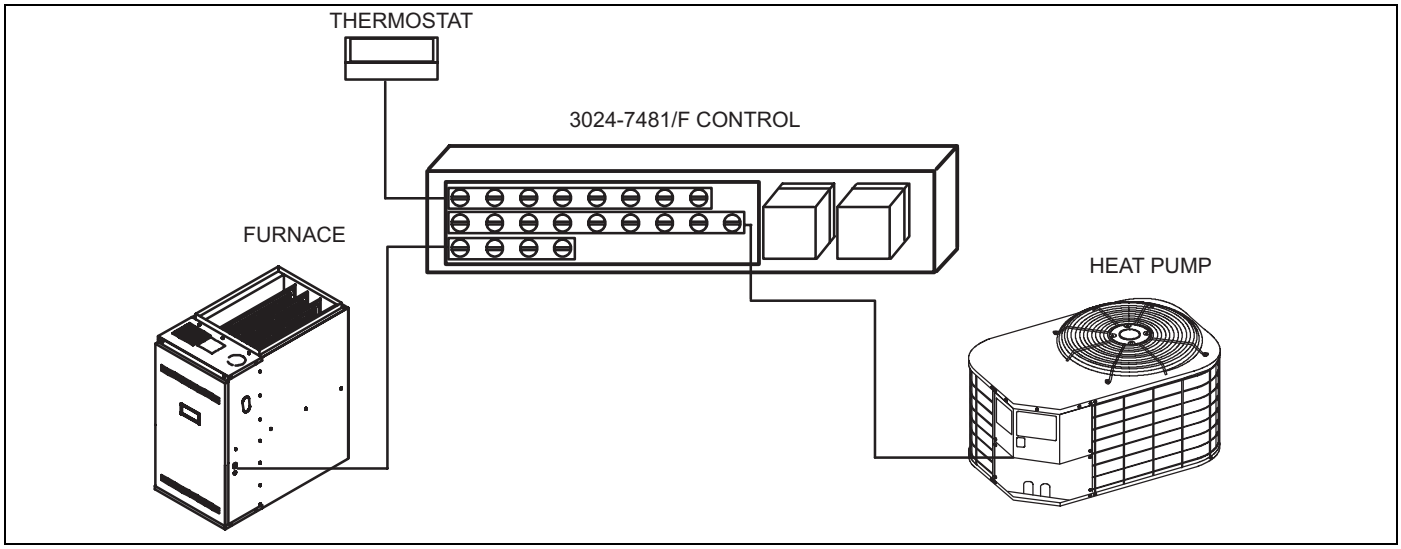

FIGURE 1: BRHS, BRHQ, DRHS, DRHQ, ERHS, ERHQ

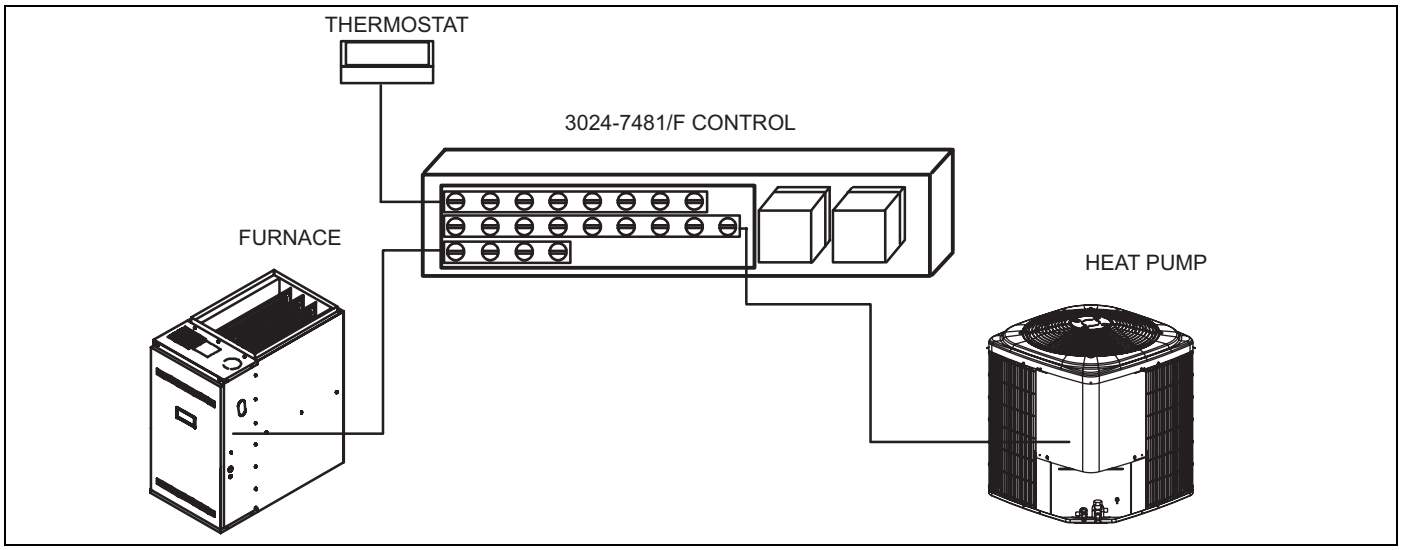

FIGURE 2: THGD, GHGD, YHJD, CHJD, LHJD

SAFETY

IMPORTANT - These instructions are intended for the use of qualified individuals specially trained and experienced in installation of this type of equipment and related system components.

Installation and service personnel are required by some states to be licensed.

Persons not qualified shall not install this equipment or interpret these instructions.

⚠WARNING

Improper installation may damage equipment, can create a shock hazard, and will void the warranty.

NOTE: The words “Shall” or “Must” indicate a requirement which is essential to satisfactory and safe product performance.

The words “Should” or “May” indicate a recommendation or advice which is not essential and not required but which may be useful or helpful.

Installation and service personnel are required by some states to be licensed.

Persons not qualified shall not install this equipment or interpret these instructions.

The installer should comply with all local codes and regulations which govern the installation of this type of equipment.

Local codes take precedent over any recommendations contained in these instructions. In lieu of local codes, the equipment should be installed in accordance with National Electric Code and in accordance with the recommendations made by the National Board of Fire Underwriters.

⚠ CAUTION

FIRE HAZARD *– Failure to observe the following warnings could cause furnace malfunction resulting in fire or asphyxiation.*

1. *When indoor heat pump coils are used with fuel burning furnaces, they must be installed in the discharged air stream. Installation of a heat pump coil in the return air stream of a fuel burning furnace could cause excessive heat exchanger corrosion and burner malfunction.*
2. *No attempt shall be made to operate the heat pump in the heating mode at the same time the fuel burning furnace is in operation. Failure to observe this warning will result in abnormally high refrigerant temperatures and pressures resulting in system failure.*

Ground unit to prevent electric shock. Before making electrical connections or servicing the system, disconnect power to both the indoor and the outdoor units.

GENERAL INFROMATION

Contents of this Package are:

1. Heat Pump Dual Fuel Control Box
2. Outdoor Thermostat
3. User's Information Manual (Supplementary)
4. Installation Instructions

APPLICATION

The 3024-7481/F heat pump dual fuel control may be used with any heat pump in conjunction with any residential fossil fuel burning furnace that has a blower capable of supplying air volumes suitable for air conditioning. It may also be used with any heat pump in conjunction with any UPG manufactured housing furnace. See Table 1 for air volume requirements. The furnace must also have a 40 VA transformer and a blower relay.

Nominal Tons of Air Conditioning	Air Volume CFM
1-1/2	600
2	800
2-1/2	1000
3	1200
3-1/2	1400
4	1600
5	1800

The control is designed to separately operate the heating systems of the heat pump and the furnace. The only time that both will operate simultaneously is during the defrosting of the heat pump where the furnace is operated to temper the supply air to the conditioned space.

During normal heating operation the wall thermostat controls the temperature of the home. The outdoor thermostat is used to select either the heat pump or the furnace, depending on its set-point. At outdoor ambient temperature above the set-point, the heat pump will operate to maintain the home comfort. Below the set-point, the furnace operates. Regardless of which system is operating, the first stage of the wall thermostat is normally in control (unless the home loses heat faster than can be compensated for by the heat pump, at which point the second stage of the wall thermostat will turn on the gas furnace until the first stage is satisfied).

If the wall thermostat selection switch is placed in "Emergency Heat" position, or during a heat pump "Safety Lockout" the furnace will provide all heat. Normal operation will be resumed when the "System" switch is returned to the "Heat" position, or when the Safety Lockout" is reset (see heat pump instructions for further information about a "Safety Lockout" condition).

Read these instruction carefully before the installation of any component of the heat pump system. Where these instructions differ from the instruction packed with other components, these instructions shall take precedence. Otherwise, use components that do not differ as a guide line for installing those components.

In most cases, the control package should not be retrofitted to gun furnaces; use a 3024C7473 control package for these applications. The 3024C7473 control includes a 40 VA transformer, blower motor terminals, and a blower control relay that are required for such applications.

Do not install any coil to a furnace which is to be operated during the heating season without attaching the refrigerant lines to the coil and opening the system service valves. Failure to do so will cause excessive pressures within the coil that could damage the coil and cause personal injury.

NOTE:

1. The heat pump outdoor unit, indoor coil, and refrigerant line set must be matched up as shown in the tabular data sheet packed with the heat pump outdoor unit.
2. For horizontal coil applications, field fabricated blank-off plates or transition plenum may be required to fit the coil cabinet to the furnace outlet flanges.
3. Amp. draw for the wall thermostat's first stage heat anticipator is a non-adjustable .6 amp. The second stage anticipator should be adjusted to .3 amp.

INSTALLATION ON GAS OR OIL FURNACE

⚠WARNING

SHOCK HAZARD - *Disconnect electric power to equipment before installation to prevent equipment damage and possible personal injury.*

The furnace must have a blower capable of delivering the air volume specified in Table 1 and be air conditioning ready.

Install heat pump coil and cabinet onto the outlet of the furnace. See instruction packed with these components. Route the refrigerant lines from the outdoor heat pump unit to the indoor heat pump coil per the instructions packed with the heat pump.

Mount the 3024-7481/F control box on the outside of the furnace casing or on a wall near the furnace. The control box may be located outside directly on certain outside gas furnaces. The location and installation must conform to approved electrical codes. If the furnace does not have a 40 VA (or larger) transformer, and an A/C blower relay, those items must be installed at this time.

Low voltage control wiring to the furnace, wall thermostat, outdoor heat pump unit, and 3024-7481/F control box should be connected per Figures 1, 2, and 3.

Installation of Outdoor Thermostat

Location

The outdoor thermostat is designed to be installed in an outdoor environment. However, constant shade is the determining factor in selecting a location for the outdoor thermostat. Radiant heat from direct rays of the sun could affect the operation of the thermostat.

There may be some heat pump models that provide an attachment location for the outdoor thermostat, most models do not. Careful selection should be used in locating the outdoor thermostat. The electric cable provided is long enough to allow the thermostat to be mounted on a nearby structure.

Wiring

Remove the cover from the heat pump control box. Route the end of the cable through the grommet and into the low voltage box. Connect cable to the correct terminations. See Figure 3. Coil and neatly tie excess cable. Replace cover in unit control box and set outdoor thermostat.

Setting the Outdoor Thermostat

IMPORTANT - The outdoor thermostat should not set lower than the application balance point temperature. It is permissible to set the outdoor thermostat above this temperature if it is economically beneficial.

Determining the application balance point:

Before setting the outdoor thermostat, a heat loss calculation must be made of the home. The heat loss of a home is assumed to be linear and inversely proportionate to the outdoor temperature. As the outdoor temperature drops, the heat loss of the home increases. Conversely, the heat pump capacity is reduced as the outdoor temperature drops. At some outdoor temperature, heat pump capacity will balance with the home heat loss.

In other words, at the temperature, the heat loss of the home will be identical to the amount of heat produced by the heat pump.

In order to determine the exact temperature, it is necessary to chart the heat loss against the capacity of the heat pump. See the heat pump application data for the capacity information at various outdoor temperatures. Chart the capacities of the heat pump at the corresponding outdoor temperatures on a graph and connect the points. See Figure 4 “Example Chart 1”. The vertical axis represents BTU per hour (in thousands) and the horizontal axis represents outdoor temperature.

For this example, the heating performance data for 024 model is shown as Figure 6 and was obtained from the Technical Guide for 018 models thru 060 13 SEER R-22 Split System Heat Pump. First, the outdoor unit is matched to an indoor coil and the corresponding multipliers are selected; for this example, MH30S is selected as shown.

In addition, assume air entering the indoor coil is 70ºF (temperature at which the room is to be maintained) and indoor CFM is 600. Then plot BTU per hour against outdoor temperature as shown with diamond symbol. Draw a straight line that best fits all the points.

For instance, for 47°F outdoor air, the “BTUH x 1000” value would be:		
Thousand British Thermal Units per Hour (MBTUH) value at 47°F Outdoor and 70°F indoor	X	MH30S coil multiplier for Thousand British Thermal Units per Hour (MBH)
= 22.3 x 1.0 = 22.3 BTUH x 1000.		

In addition, for the purpose of this example, assume that the calculated heat loss of the home is 50,800 BTU’s per hour at an outdoor design temperature of + 10º F. Moving up the vertical axis, at + 10º F, locate the number of BTU’s per hour heat loss and mark that point on the graph. Placing a straight edge on this point, and aligning with the 70º F, (the normal indoor comfort condition) in the lower right-hand corner, connect these two points with a straight line. Locate the point at which the heat loss crosses the capacity curve of the heat pump. This intersection is the application balance point temperature for the example application.

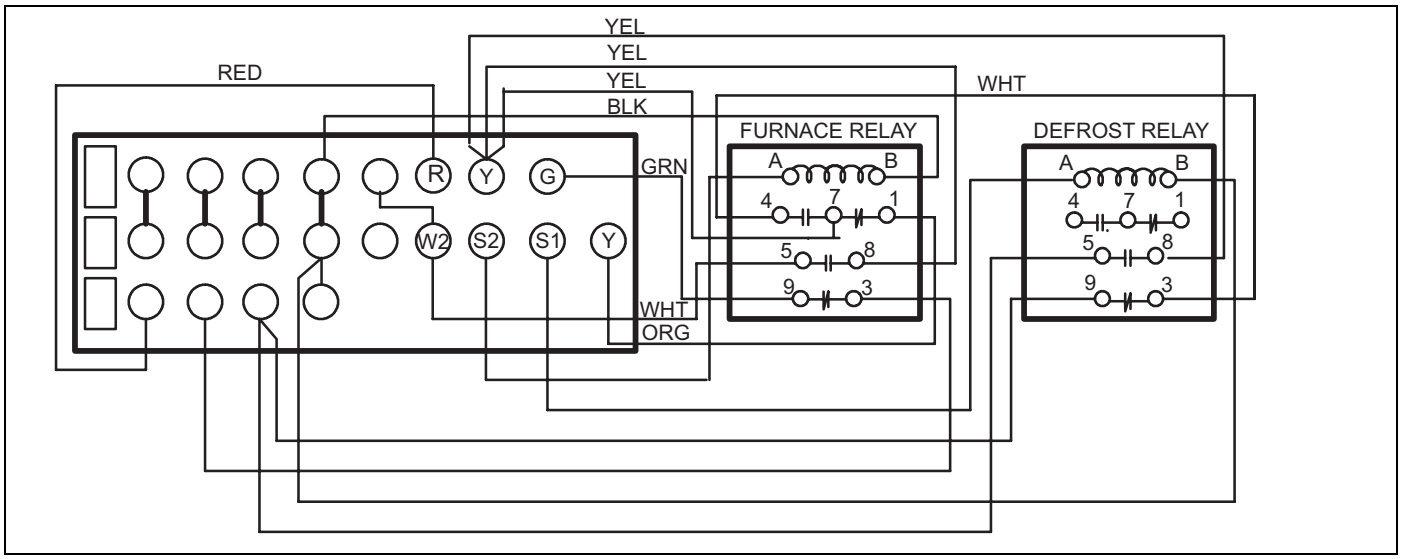

FIGURE 3: Wiring Diagram - 3024-7481/F Heat Pump Dual Fuel Control Kit

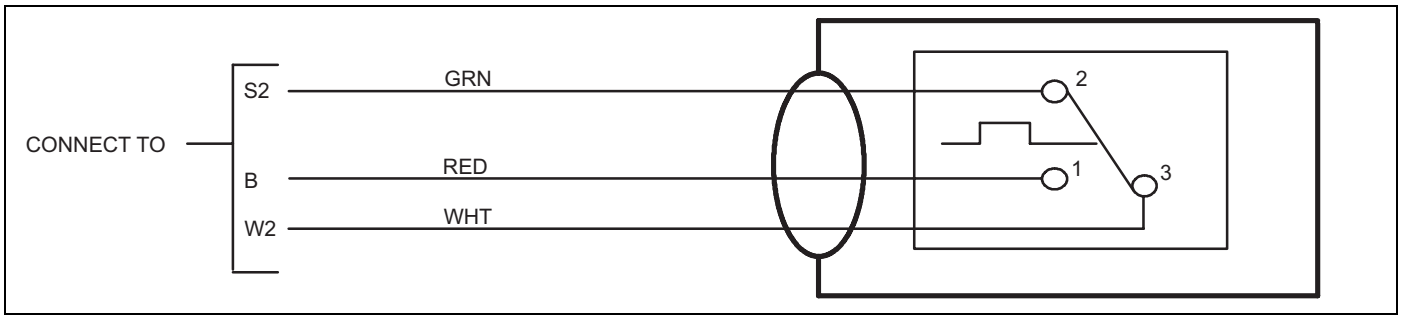

FIGURE 4: Wiring Diagram - 3024-671/F Outdoor Thermostat

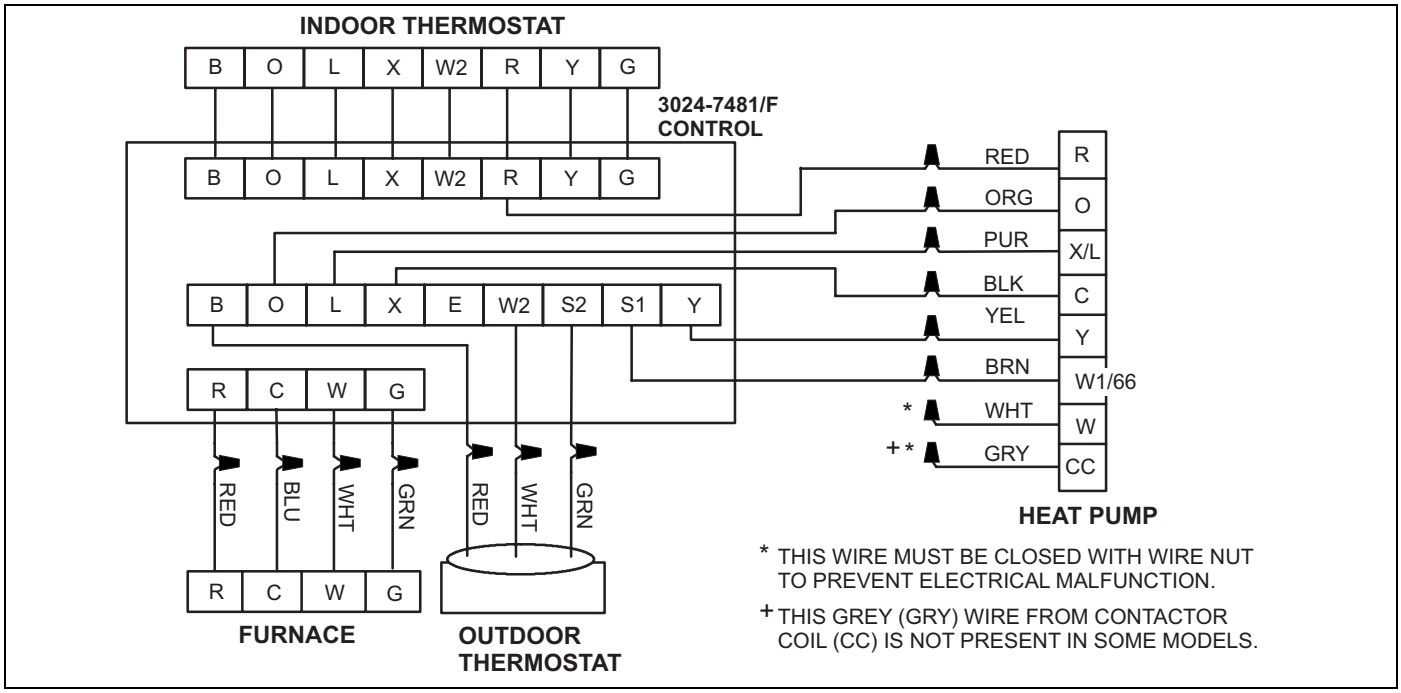

FIGURE 5: Wiring Connections

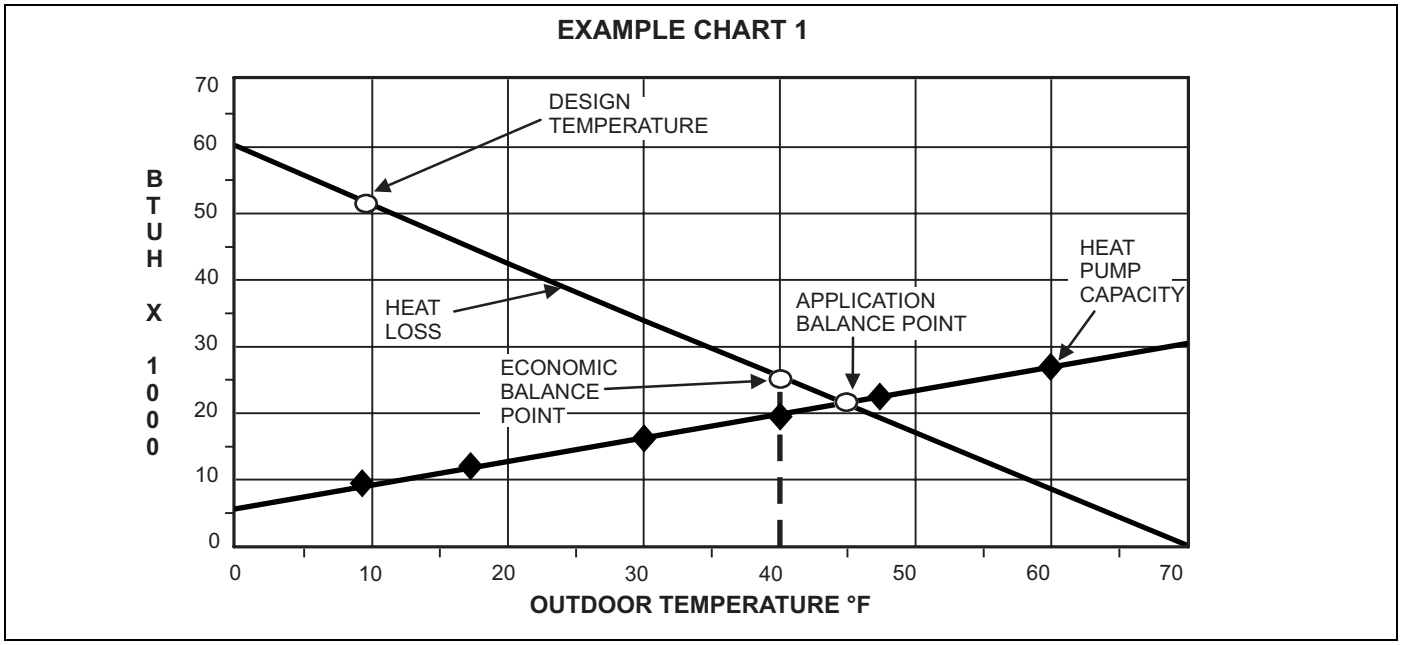

FIGURE 6: Example Chart 1

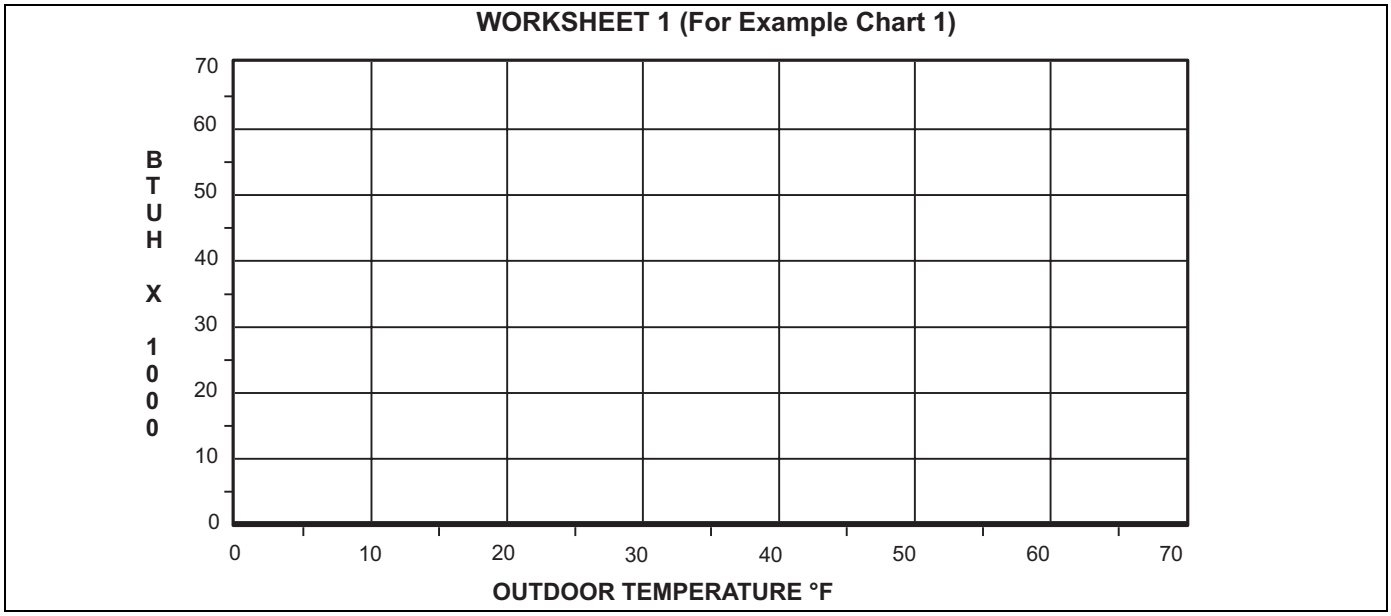

FIGURE 7: Worksheet 1

NOTES FOR WORKSHEET 1

Determining the economical balance point:

The KW values from the same heat pump application data of Figure 6 is used for this section and the result is plotted as shown with triangle symbol in Figure 7 “Example Chart 2”. The vertical axis represents BTU (in thousands) per dollar and the horizontal axis represents outdoor temperature.

Determine the cost of electricity, price and type of furnace fuel (natural gas, propane, or heating oil), and efficiency of furnace. For the purpose of this example, assume cost of electricity is $0.10 per KWh, cost of natural gas is $0.84 per therm, and furnace efficiency is 90%.

For electricity calculation, plot BTU per $ against outdoor temperature. For instance, for 40°F outdoor air, the “BTU x 1000 per $” value would be:

Thousand British Thermal Units per Hour (MBTUH) value at 47°F Outdoor and 70°F indoor	X	MH30S coil multiplier for Thousand British Thermal Units per Hour (MBH)	3	Cost of electricity ($/KWh)	3	Kilowatt (KW) value at 47°F Outdoor and 70°F indoor	3	MH30S coil multiplier for Kilowatt (KW)

= 19.3 x 1.0 x (1 / 0.10) x (1 / 1.8) x (1 /1.0)
= 107 BTU x 1000 per $.
This value is the amount of heat the heat pump provides for each dollar spent for electricity to operate the heat pump.

For the furnace fuel calculation, plot the BTU per $ against outdoor temperature. This is usually a linear horizontal line. For instance, for the natural gas example, the “BTU x 1000 per $” value would be:

$$\text{Furnace Efficiency} \times \text{Cost of natural gas ($/therm)} \times \frac{100000\ \text{BTU}^*}{1\ \text{therm}} \times \frac{1}{1000}$$

= 0.9 x (1 / 0.84) x (100000 / 1) x (1 / 1000)
= 107 BTU x 1000 per $.
This value is the amount of heat the furnace provides for each dollar spent for natural gas.

If using heating oil furnace, then apply:

$$\text{Furnace Efficiency} \times \text{Cost of heating oil ($/gal)} \times \frac{139000\ \text{BTU}^*}{1\ \text{gal}} \times \frac{1}{1000}$$

If using propane furnace, then apply:

$$\text{Furnace Efficiency} \times \text{Cost of propane ($/gal)} \times \frac{916000\ \text{BTU}^*}{1\ \text{gal}} \times \frac{1}{1000}$$

These plots represent the fuel and electrical costs. Where these two costs intersect is the economical balance point. It is where $1.00 will purchase the same amount of BTU’s from either the heat pump or the furnace. Mark the economic balance point for later reference. In summary, this application example shows an economic balance point of 40º F for a 13 SEER heat pump and a 90% natural gas furnace using $0.10/KW electricity and $0.84/therm. gas.

Adjusting Thermostat Set Point

On the chart that you determined the application balance point for your particular application as shown in Figure 4. Mark and label the economical balance point temperature on the curve representing the heat loss of the structure.

Remove the outdoor thermostat cover. The thermostat is factory set at 30º F. It should be adjusted to the higher of the two temperatures marked on “heat loss” curve whether it be the application or economical balance point. Adjust by turning the slot on the thermostat shaft to align with the new temperature setting.

Should the economic balance point be lower than the application balance point, and the outdoor thermostat is set to this temperature, the control will operate the heat pump until the home temperature drops to close the second stage of the wall thermostat, at which time the heat pump will be turned off and the furnace will operate. Under this condition, the furnace will continue to operate until the home temperature rises to satisfy the first stage. When the first stage of the wall thermostat closes again, the control will operate the heat pump and the cycle will repeat to maintain the home comfort. Replace the outdoor thermostat cover.

Energy conversion Factor for furnace fuels (propane, heating oil, natural gas) changes with every batch of fuel.

HEATING PERFORMANCE DATA										
CONDENSING UNIT MODEL NO		**ERHS0241BA**								
EVAPORATOR COIL MODEL NO		**FC/MC/PC/UC24**								
AIR TEMP. ENTERING OUTDOOR UNIT	**AIR TEMP. ENTERING INDOOR COIL**	ID CFM								
		600			800			1000		
		MBTUH	KW	C.O.P.	MBTUH	KW	C.O.P.	MBTUH	KW	C.O.P.
60	60	26.5	2.1	3.7	21.7	0.7	8.8	25.5	1.9	3.9
	70	25.6 ◆	2.1 ▲	3.5	20.7	1.1	6.3	25.4	2.0	3.7
	80	24.6	2.2	3.3	19.7	1.6	3.7	25.2	2.1	3.5
47	60	23.4	1.8	3.7	18.4	1.3	4.1	22.4	1.7	3.8
	70	22.3 ◆	1.9 ▲	3.5	17.3	1.0	5.6	22.3	1.8	3.6
	80	21.1	1.9	3.2	16.3	0.7	7.0	22.2	1.9	3.5
40	60	20.4	1.7	3.5	16.4	1.2	3.9	20.7	1.6	3.7
	70	19.3 ◆	1.8 ▲	3.2	15.3	1.3	3.5	20.4	1.7	3.5
	80	18.2	1.8	2.9	14.1	1.3	3.1	20.2	1.8	3.4
30	60	18.8	1.6	3.4	13.8	1.2	3.4	19.0	1.5	3.6
	70	16.9 ◆	1.6 ▲	3.0	12.7	1.2	3.1	17.8	1.6	3.3
	80	15.0	1.7	2.6	11.7	1.2	2.8	16.6	1.6	3.0
17	60	13.3	1.5	2.6	10.0	1.1	2.6	15.3	1.4	3.1
	70	11.4 ◆	1.5 ▲	2.2	9.0	1.1	2.3	13.0	1.5	2.6
	80	9.5	1.6	1.8	8.0	1.2	2.0	10.8	1.5	2.0
10	60	12.0	1.5	2.4	8.9	1.1	2.3	11.8	1.4	2.5
	70	9.6 ◆	1.5 ▲	1.9	8.0	1.1	2.1	10.0	1.5	2.0
	80	7.2	1.6	1.4	7.0	1.2	1.8	8.2	1.5	1.6
NOTE: ALL CAPACITIES ARE NET WITH INDOOR FAN HEAT ALREADY DEDUCTED AT 1250 BTUH/1000 CFM.										

Multipliers for determining the performance with other indoor sections.

Air Handler	Coil	MBH	KW	COP
MA08B	FC/MC24B	1.00	1.00	1.00
MA08B	FC/MC30B	1.00	1.00	1.00
MA08B	FC/MC36B	1.00	1.00	1.00
AHP24	–	1.00	1.00	1.00
F*FP030	–	1.00	1.00	1.00
MV12B	FC/MC24B	0.97	0.93	0.90
MV12B	FC/MC30B	0.97	0.93	0.90
AV24	–	0.97	0.93	0.90
–	FC/MC/PC/UC30	1.00	1.00	1.00
–	FC/MC/PC/UC36	1.00	1.00	1.00
–	HC30	1.00	1.01	1.01
–	HD24	1.00	1.00	1.00
–	MH30S	1.00	1.00	1.00

Variable Speed Furnace	Coil	MBH	KW	COP
(F,L)C8VA12	FC/MC/PC24A	0.97	0.96	0.93
FC9VA12	FC/MC/PC24A	0.97	0.96	0.93
FC9(C,V)B12	FC/MC/PC24B	0.97	0.96	0.93
(F,L)C8VA12	FC/MC/PC30A	0.97	0.96	0.93
FC9VA12	FC/MC/PC30A	0.97	0.96	0.93
FC9(C,V)B12	FC/MC/PC30B	0.97	0.96	0.93
(F,L)C8VA12	FC/MC/PC36A	0.97	0.96	0.93
FC9VA12	FC/MC/PC36A	0.97	0.96	0.93
FC9(C,V)B12	FC/MC/PC36B	0.97	0.96	0.93
(F,L)C8VA12	HC30	1.00	1.01	1.01
FC9VA12	HC30	1.00	1.01	1.01
(F,L)C8VA12	HD30	0.97	0.96	0.93
FC9VA12	HD30	0.97	0.96	0.93

FIGURE 8: ERHS024 Extract from Technical Guide for ERHS018 thru 060 13 SEER R-22 Split System Heat Pump

HEATING PERFORMANCE DATA										
CONDENSING UNIT MODEL NO		THGD24S21S1								
EVAPORATOR COIL MODEL NO		AHP24								
AIR TEMP. ENTERING OUTDOOR UNIT	AIR TEMP. ENTERING INDOOR COIL	ID CFM								
		600			800			1000		
		MBTUH	KW	C.O.P.	MBTUH	KW	C.O.P.	MBTUH	KW	C.O.P.
60	60	25.6	4.23	1.77	26.9	4.47	1.76	28.3	4.70	1.76
	70	24.4 ◆	4.09 ▲	1.75	25.8	4.41	1.71	27.3	4.75	1.68
	80	23.2	3.95	1.72	24.7	4.35	1.66	26.2	4.79	1.60
47	60	21.8	4.46	1.43	23.1	4.90	1.38	24.3	5.35	1.33
	70	20.6 ◆	4.03 ▲	1.51	21.9	4.20	1.56	23.2	4.40	1.61
	80	19.4	3.59	1.58	20.7	3.50	1.73	22.1	3.44	1.88
40	60	19.5	4.10	1.39	20.8	4.54	1.34	22.0	4.99	1.29
	70	18.6 ◆	3.76 ▲	1.46	19.8	4.12	1.42	21.0	4.49	1.38
	80	17.7	3.41	1.52	18.8	3.69	1.49	19.9	3.99	1.46
30	60	17.3	3.95	1.28	18.0	4.15	1.27	18.7	4.34	1.26
	70	16.0 ◆	3.54 ▲	1.33	16.8	3.73	1.33	17.6	3.93	1.32
	80	14.7	3.12	1.38	15.6	3.31	1.38	16.5	3.52	1.37
17	60	12.8	2.71	1.38	13.5	3.16	1.25	14.1	3.68	1.12
	70	11.7 ◆	2.67 ▲	1.28	12.4	2.98	1.21	13.0	3.33	1.14
	80	10.6	2.63	1.18	11.2	2.80	1.17	11.8	2.97	1.16
10	60	9.5	2.67	1.04	10.7	2.92	1.07	11.9	3.16	1.10
	70	9.2 ◆	2.50 ▲	1.08	10.1	2.71	1.09	10.9	2.91	1.10
	80	8.9	2.32	1.12	9.4	2.50	1.10	9.9	2.66	1.09
NOTE: ALL CAPACITIES ARE NET (KBTUH) WITH INDOOR FAN HEAT ALREADY DEDUCTED AT 1250 BTUH/1000 CFM.										

Multipliers for determining the performance with other indoor sections.

Air Handler	Coil	MBH	KW	COP
–	FC/MC/PC/UC24	1.00	1.00	1.00
–	FC/MC/PC/UC30	1.00	1.00	1.00
–	FC/MC/PC/UC32	1.00	1.00	1.00
–	FC/MC/PC/UC35	1.00	1.00	1.00
–	HC30	1.00	1.00	1.00
–	HC36	1.00	1.00	1.00
–	HD24	1.00	1.00	1.00
–	MH24S	1.00	1.00	1.00
–	MH30S	1.00	1.00	1.00
AHP30	–	1.00	1.00	1.00
AV24	–	0.97	1.08	0.92
FPFP030	–	1.00	1.00	1.00
MV12B	FC/MC24B	0.98	1.07	0.93
MA08B	FC/MC24B	1.00	1.00	1.00
MV12B	FC/MC30B	0.98	1.07	0.93
MA08B	FC/MC30B	1.00	1.00	1.00
MV12B	FC/MC35B	0.97	1.07	0.93
MA08B	FC/MC35B	1.00	1.00	1.00

Variable Speed Furnace	Coil	MBH	KW	COP
PV8*A12	FC/MC/PC/UC24A	0.98	1.05	0.95
PV9*A12	FC/MC/PC/UC24A	0.98	1.04	0.96
P(C,V)9*B12	FC/MC/PC/UC24B	0.98	1.05	0.95
PV8*A12	FC/MC/PC/UC30A	0.98	1.05	0.95
PV9*A12	FC/MC/PC/UC30A	0.98	1.05	0.95
P(C,V)9*B12	FC/MC/PC/UC30B	0.98	1.05	0.95
PV8*A12	FC/MC/PC/UC32A	0.98	1.05	0.95
PV9*A12	FC/MC/PC/UC32A	0.98	1.05	0.95
P(C,V)9*B12	FC/MC/PC/UC35B	0.98	1.05	0.95
PV8*A12	HC30	0.98	1.05	0.95
PV9*A12	HC30	0.98	1.05	0.95
P(C,V)9*B12	HC36	0.98	1.05	0.95

FIGURE 9: THGD24 Extract from Technical Guide for THGD24 thru 60 13 SEER R-22 Split System Heat Pump

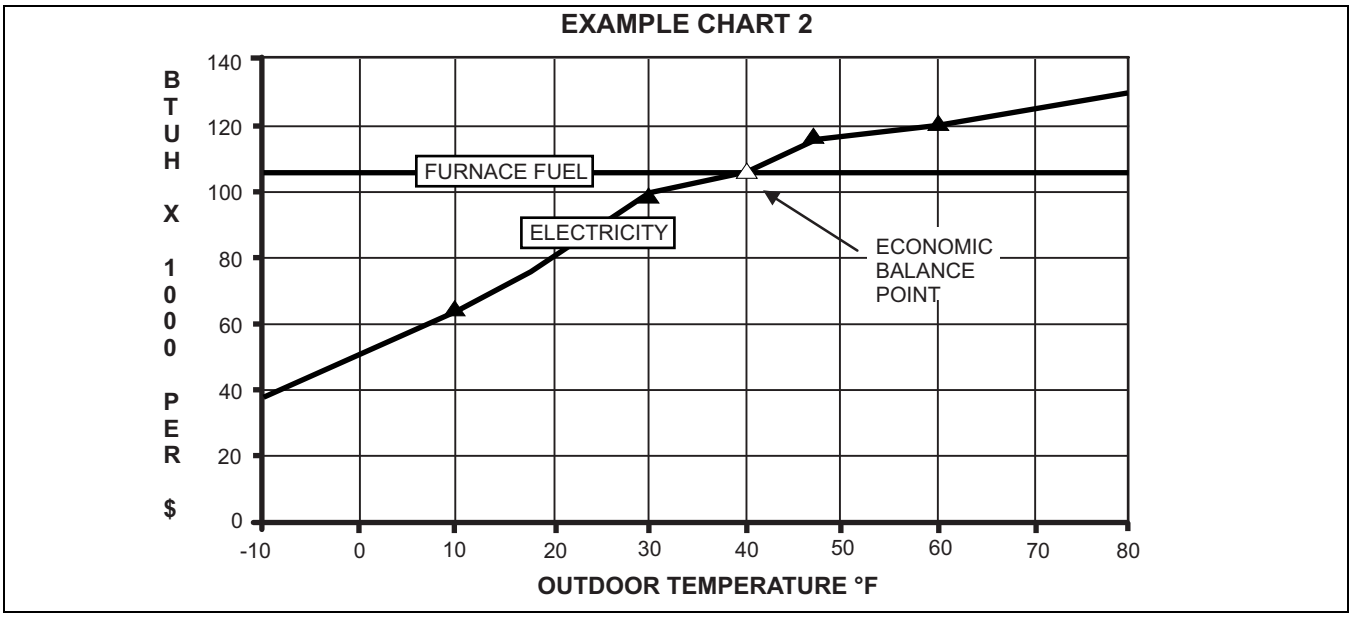

FIGURE 10: Example Chart 2

NOTES FOR WORKSHEET 2

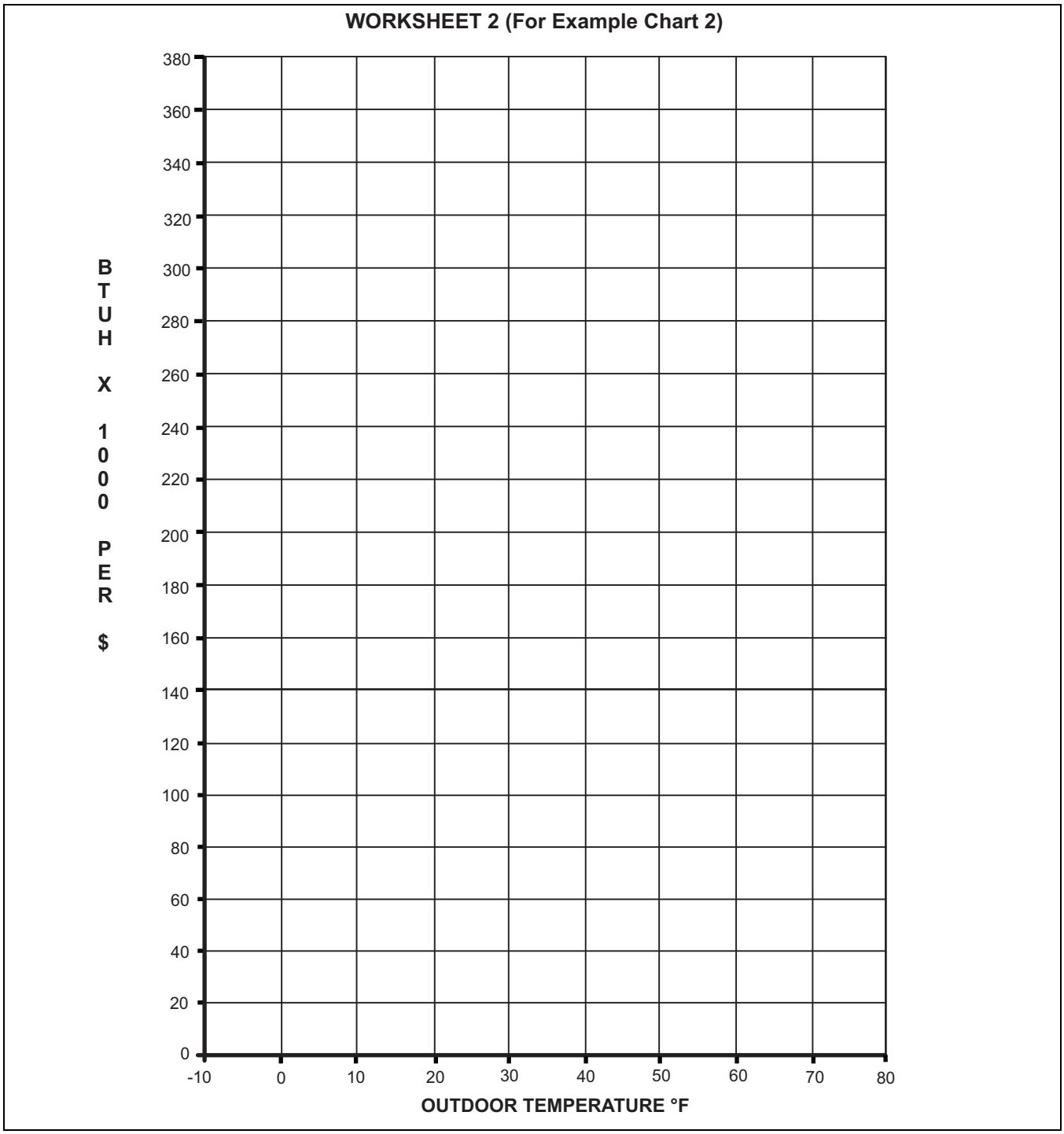

FIGURE 11: Worksheet 2

SYSTEM OPERATIONAL CHECK-OUT

NOTE: If a programmable wall thermostat is used on this application, there will be a five minute delay when the system is powered up for the first time, and if the system switch is moved to another mode. See instructions packed with the thermostat.

1. Make sure all service disconnects are open.
2. Set thermostat switches as follows:
   a. Fan switch to “Auto”.
   b. System switch to “Off”.
3. Close disconnect to heat pump outdoor unit.
4. Close disconnect to furnace.
5. Turn thermostat fan switch to “On”. Blower should operate.
6. Turn fan switch back to “Auto”. Blower should stop within 90 seconds.
7. Turn system switch to “Cool” and set thermostat temperature setting below room temperature
   a. Outdoor unit compressor should operate.
   b. Outdoor unit fan should operate.
   c. Furnace blower should operate.
   d. Cool air should flow from registers after system has operated for a few minutes.
8. Turn system switch to “Off” and wait 5 minutes.
9. Turn system switch to “Heat” and set thermostat setting above room temperature just enough to close the first stage. Set the outdoor thermostat above the outdoor temperature.
   a. Outdoor unit compressor should operate.
   b. Outdoor unit fan should operate.
   c. Furnace blower should operate.
   d. Warm air should flow from registers after the system has operated for a few minutes.
10. Set thermostat to higher temperature to close the second stage.
    a. Outdoor unit compressor should not operate.
    b. Outdoor unit fan should not operate.
    c. Furnace should operate.
    d. Furnace blower should operate.
    e. Warm air should flow from the registers after a few minutes.
11. Set thermostat to lower temperature to insure heating system cycles off.
12. Turn wall thermostat system switch to “Emergency Heat”. Emergency heat light should turn on, but nothing should operate.
13. 13. Set thermostat to higher temperature to close the second stage.
    a. Emergency light should be on.
    b. Auxiliary heat light should turn on.
    c. Furnace should operate.
    d. Furnace blower should operate.
    e. Warm air should flow from the registers after a few minutes.
14. Turn wall thermostat system switch to “Heat”.
    a. Emergency heat light should turn off.
    b. Auxiliary light should remain on.
    c. Furnace should continue to operate.
    d. Furnace blower should operate.
    e. Outdoor unit compressor should not operate.
    f. Outdoor unit fan should not operate.
    g. Warm air should continue to flow from the registers.
15. Set outdoor thermostat below outdoor temperature.
    a. Furnace should stop operating.
    b. Furnace blower should operate.
    c. Outdoor unit compressor should operate.
    d. Outdoor unit fan should operate.
    e. Warm air should continue to flow from the registers.
16. Reset outdoor thermostat to its operating temperature (see: Setting the Outdoor Thermostat).
17. Set system switch to desired mode and adjust temperature lever to desired temperature if everything checks out correctly.

NOTE: In the heating mode the indoor wall thermostat controls the system operation to maintain the selected temperature, operating either the heat pump or the furnace to do so. The selection of either is controlled by the outdoor thermostat, i.e. at temperatures above the setting, the heat pump operates in response to the first stage of the wall thermostat, at temperatures below the setting of the outdoor thermostat the furnace operates (also see the outdoor thermostat installation).

Exceptions to the above:

A. If the heat pump fails to operate in the heating mode due to high refrigerant pressure or temperature, the furnace will operate regardless of the status of the outdoor thermostat.

B. If the system switch of the wall thermostat is placed in “Emergency Heat” position, only the furnace will operate.

C. If a defrost cycle is initiated by the heat pump, both the heat pump and the furnace will operate until the defrost cycle is completed.

NOTE: In both A and B above, the furnace operation is controlled by the second stage of the wall thermostat. During the defrost cycle the furnace is controlled by the first stage.

NOTE: The heat pump has a safety lockout that will keep it from operating if some fault causes the high temperature or the high pressure limit switches to open. To reset the lockout, turn the indoor thermostat system to “Off”, then back to the selected mode within 5 seconds or disconnect the power to the transformer for at least two seconds. The heat pump will now operate. Should a lockout re--occur, then the cause of the lockout should be sought and corrected immediately.

NOTES

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